PROCEEDINGS OF THE
ROYAL ENTOMOLOGICAL SOCIETY
OF LONDON

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GENERAL MEETING

WEDNESDAY, 19TH NOVEMBER, 1947, **at 5.30 p.m.**

AGENDA

1. Confirmation of the Proceedings of the General Meeting held on 5th November, 1947.

2. Recommendations of candidates for Fellowship.

3. Announcement of election of new Fellows.

4. Additions to the Library :—

Presented.

Bristowe, W. S. *A book of Spiders.* 8vo. London. 1947. [The Publishers.]

Strandtmann, R. W. *A review of the North American Species of Philanthus, North of Mexico.* (*Hymenoptera :* SPHECIDAE.) 8vo. Columbus, Ohio 1946. [The Ohio State University Press.]

In addition, separates have been presented by Professor G. D. Hale Carpenter, Professor F. Silvestri, Mr. N. D. Riley, the Imperial Institute of Entomology, and the Cawthron Institute, New Zealand.

5. Exhibits.

6. Papers accepted for publication in the *Transactions.*

7. Admission of Fellows.

8. Nomination of Officers and Council for 1948.

9. Communications.

(1) **Mr. R. A. Cumber** (a visitor).

Some parasites of Humblebees.

[Abstract.]

Five of the parasites of Humblebees to be found within a thirty mile radius of London will be discussed and, where possible, exhibited, namely :—

(*a*) An undescribed mite from the abdominal air-sacs.

(*b*) The nematode worm *Sphaerularia bombi* Dufour.

(*c*) The Tachinid fly *Brachycoma devia* Fallen.

(*d*) Conopid parasitisation.

(*e*) The Humblebee wax-moth *Aphomia sociella* L.

(2) Dr. W. H. Thorpe

Some recent studies on highly complex behaviour in insects.

[Abstract.]

The past few years have seen the publication on the Continent of some extremely interesting studies on the learning ability of the higher insects, particularly in connection with direction finding and homing. This work may necessitate a complete revision of our ideas concerning learning abilities of the Arthropods and, in particular, the higher Hymenoptera. Since this work is not yet generally available in this country, a short account of it may be found interesting. In particular the recently published work of Baerends, Tinbergen and von Frisch on the elaborate methods of orientation in the Fossorial wasps (SPHECIDAE) and the Honey Bee (*Apis*) will be described.

Fellows are particularly requested to bring suitable exhibits to the General Meetings even though it may not be possible to announce their intention to do so before the meeting.

If circumstances permit tea will be served in the Library before the meeting.

NOTICE OF FORTHCOMING MEETING

The meeting on **3rd December, 1947,** will be devoted to a discussion on

The dispersal of insects by wind and air currents.

NOTICES

A card index of Fellows' addresses arranged **on a geographical basis** is now available for the use of Fellows in the Society's Rooms. Addresses in Great Britain are grouped under counties ; elsewhere under Dominions, Colonies, Foreign States, etc.

ADMISSION OF FELLOWS

Any Fellow who has not been formally admitted to the Society under Chapter XIV, Section 4 of the Bye-Laws and attends the meeting on 19th November, 1947, is requested to inform the Secretary before 5.15 p.m. on that date.

PROCEEDINGS OF THE GENERAL MEETING HELD ON 5TH NOVEMBER, 1947.

Dr. C. B. Williams, M.A., President, in the Chair.

Present, 67 Fellows and 22 Visitors.

The minutes of the General Meeting held on 15th October were confirmed and signed by the President, subject to the following amendment :—

> Page 37, lines 15 and 16—*Delete* "In the discussion . . . similar observation", and *substitute* "Professor Carpenter said that he understood that the ant *Lasius flavus* was of such gentle habits that it would not be likely to attack large living larvae or pupae such as *Cossus* "

The names of the following candidates for election were read : For the first time : W. J. Burley, C. A. W. Duffield, Dr. G. H. Lowe, J. P. Stevenson, and Trevor Trought, M.A.

For the second time : G. M. Haggett.

The Secretary read the names of the following newly elected Fellows of the Society : S. D. Agarwala, c/o Queen Mary College, Mile End Road, London, E.1 ; H. Bhattacharjee, B.A., Asso.S.T.A., Bengal Sugar Advisory Board, 11-B, Fern Road, Calcutta, 19, India ; A. L. Capener, St. George's Home for Boys, P.O. Box 4, Cleveland, Johannesburg, South Africa ; Lt.-Col. J. H. Cater, I.M.S., c/o Grindlay's Bank, 54, Parliament Street, London, S.W.1 ; R. H. P. Curle, West Coker House, West Coker, near Yeovil, Somerset ; B. O. C. Gardiner, The Entomological Field Station, 34a, Storeys Way, Cambridge ; Miss P. C. Gardiner, B.Sc., The Spinney, Whiteleaf, Aylesbury, Bucks ; N. H. Glegg, The Apiary, West of Scotland College of Agriculture, Auchincruive, Ayr ; J. W. Hughes, B.Sc., "Redmays," Woodlands Road, Shotley Bridge, Co. Durham ; T. J. Honeybourne, Lacey's Farm, Rettendon Common, Chelmsford ; Major O. M. Lee, The School of Agriculture, Serdang, Selangor, Malaya ; P. Lepesme, Doct.Pharm., 6, rue de Castiglione, Paris 1, France ; G. McCartney, "Beechgrove," Kirkpatrick-Durham, by Castle Douglas, Scotland ; G. A. Matthews, 35, Eastleigh Road, Barnehurst, Kent ; A. G. Maycock, "Headingley," 336, Leander Avenue, Hillside, Bulawayo, S. Rhodesia ; D. E. Owen, Ph.D., F.G.S., Director, City Museum, Park Row, Leeds ; G. N. Philipson, B.Sc., The Hall West, Forest Hall, Newcastle upon Tyne ; J. Phipps, B.Sc., Imperial College of Science, Prince Consort Road, S.W.7 ; M. D. Price, B.Sc., A.R.C.Sc., 136, Worple Road, London, S.W.19 ; Lt. N. W. Rockingham, R.N., Bay Tree Cottage, South Road, Hayling Island, Hants ; G. E. Shewell, M.Sc., Division of Entomology, Science Service, Dept. of Agriculture, Ottawa, Canada ; Miss N. Waloff, Ph.D., Imperial College of Science and Technology, Prince Consort Road, S.W.7 ; R. W. Watson, South Haven, Stanley Road, Lymington, Hants ; H. H. West, 68, Harley House, London, N.W.1. ; M. A. Wynter-Blyth, Himat Vilas, Jamnagar, Kathiawar, India ; and stated that, by leave of Council, the nomination form in favour of Mr. D. A. Tidman had been withdrawn.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. L. Hugh Newman exhibited, on behalf of a friend, a series of remarkable aberrations of *Colias* taken in West Sussex.

The President mentioned that, in response to views put forward by Fellows, exhibits in future would not be passed round the room during meetings. Exhibitors were urged to show them in the Library before the meetings in so far as practicable, and to place them subsequently on the President's desk.

Mr. S. D. Agarwala, Mr. H. Dinnage and Mr. H. L. G. Stroyan signed the Obligation Book and were admitted as Fellows.

A discussion on migratory insects in Britain was opened by the President with a reference to recent work which had been based upon the collection of records published in the past. This work had the purpose of ascertaining the frequency of "migration years" and the relative abundance of selected species in those years and also whether the migrations of these species showed any degree of correlation. An analysis of the records of *Vanessa cardui* and *Celerio livornica* showed that years of rarity and of abundance were often similar in Europe and in N. America. Such an analysis would have been quite impossible but for the mass of published observations available, and clearly demonstrated the scientific value of such records. He also exhibited a selection of *Plusia gamma* taken at light traps in 1946 at Rothamsted. All the specimens taken in June and early July were "large" ; in July there was a marked influx of "small" individuals, which disappeared later in August, when only "large" individuals occurred. Exact measurements in this case strongly suggested that the two types were derived from different sources and perhaps represented two separate migrations.

Dr. Evans expressed the view that the collection of data and records was of little value until the causes of migration were ascertained, and suggested that the theory that overcrowding was a cause was not supported by any convincing evidence. Dr. Cockayne held that this situation was unlikely to be changed until direct observations had been systematically made in the areas in which migrations arose; he also expressed the view that recorded observations in this country represented such a very small fraction of any actual migration as to be of somewhat doubtful significance. Mr. C. N. Hawkins found difficulty in deciding at times between migration and normal spread such as that of *Polygonia c-album* ; he felt that sometimes only a difference of degree was involved.

Captain Jackson said that 1947 will always be remembered as the great year for *Colias croceus* and, in particular, its variety *helice*, and for *Rhodometra sacraria.* He thought we must differentiate between the influx of a species such as *croceus* occurring just across the Channel and a small moth like *sacraria* coming from the far south.

With reference to *Rhodometra sacraria*, he said that the first specimens he had heard of were a male which flew into a lighted window at Wye, Kent, early in June, and specimens reported by the lighthouse-keeper at Trevose Head, Cornwall, also in June. He had taken the species at Bishop's Waltham, in Hampshire, at Freshwater in the Isle of Wight, and as lately as the second weeks in October at Polzeath, North Cornwall, where he thought that the species must have been in considerable numbers since he saw one flying at dusk ; another, a freshly emerged male, came into the house on October 14th, another, also freshly emerged, was found in a telephone box on the 17th, whilst a dead specimen was found at Bodmin Road Station, in a spider's web, on the 19th. The normal time of flight of the species appeared to be at early dusk, although the insects were most easily disturbed in the fields between 3.30 and 5 p.m. B.S.T. The usual flight was so very gentle that Captain Jackson thought it was difficult to conceive migration occurring voluntarily. He suggested that the original insects to arrive here must have been picked up by strong winds in South Europe or North Africa and carried here in the upper atmosphere, being deposited eventually on our soil. Since the date of the arrival of the first insects could be fairly accurately placed as early in June, he suggested that the help of meteorologists might be enlisted to investigate at what date the prevailing air currents and meteorological conditions would have been suitable for the insects' transport to this country.

Another migrant which seemed to Captain Jackson to have been pretty widely distributed this year was *Nycterosea obstipata*, of which he had caught two males on the Hampshire coast on August 9th and August 29th, the later considerably worn. No more was seen of the species until October 14th, when four males and two females, all very fresh, came into a lighted window at Polzeath. Both the females obliged with eggs, and larvae which hatched on October 27th were feeding on chickweed and chrysanthemum.

Dr. Kettlewell reported that in the hope of shedding some light upon the causes of the phenomenal immigration of 1945, he had sought information on the climatic conditions prevailing in the Mediterranean region during the critical period, and had learnt that the season had been the wettest and coldest on record, and this was hardly conducive, according to current theory, to the encouragement of migratory swarms. He went on to suggest that perhaps at their sources of origin—*i.e.*, in their permanent breeding places—insects exist which carry a gene that indirectly stimulates migration, possibly by increasing the metabolic rate. In these reservoirs there would exist insects which were homozygous to migration (MM), others which were heterozygous (mM) to migration, and yet others (mm) which could not migrate. Selection would take place in the first generation of the immigrant because only those individuals containing the M gene would arrive at the place of breeding; environmental stimulus on individuals could not be responsible for migration because the succeeding generations from the immigrants all continued to migrate although in an entirely new environment.

Mrs. Bassadone, a visitor, expressed some doubts as to the possible validity of Dr. Kettlewell's migration gene theory. She suggested that since genes do provide within a species the means of adaptation to environment, the excessively cold and wet spring of 1945 to which Dr. Kettlewell had referred might have favoured the individuals carrying genes adapting them to such conditions and increased their numbers in comparison with a hot year which would normally kill them off. On the other hand she mentioned that in order to explain the fact that in Prague 75 per cent. of the blackbirds normally migrate every winter, Dr. Belarhádek had suggested to her that these birds did carry a migratory gene, the other 25 per cent. carrying a gene for non-migration. Thus the lack of this desire to migrate may be a Mendelian recessive which is protected in built-up areas.

Miss Longfield expressed the view that it would be very difficult to locate the places of origin of dragonfly migrations, as it was fairly well established that these species began to move away almost immediately after emerging from the larval exuviæ. Records of movement along the routes of migrations, however, were being received. July 15th was known to be the exact date on which *Sympetrum fonscolombii*, a species with a Mediterranean metropolis, reached the South Coast in 1945. [Dr. Kettlewell later remarked that he had observed the arrival of *Pontia daplidice* on the same date]. In 1947, *Sympetrum striolatum* had swarmed in County Cork during September. It appeared to have arrived on a series of south-easterly gales in August. At the same time *Pieris brassicæ* was in such numbers as to be plague. Whether the two species arrived together was not proved, but the dragonfly must have come from the Atlantic coasts of Spain and Portugal, and possibly France, as it was sub-species *nigrifemur* and not the Central European race.

Mr. R. A. Green called attention to the little noticed movements, amounting to migration, among small spiders and Acari. Many species of the latter congregated annually for breeding and then dispersed. Their larvae could be traced in widening circles until, when adult, they had spread several acres from the birthplace—a very large distance in relation to their size. The spider *Poponocranium ludicrum* arrived every year wind-born from the continent in large numbers. Species of JASSIDAE and STAPHYLINIDAE were also migratory, the former covering sometimes great distances.

Mr. E. W. Classey reported that he and Mr. G. Haggett had taken over 500 *Rhodometra sacraria* (of which he exhibited a series) in West Sussex between the first week of September and the last week in October. Almost all had been taken in stubble. As the first recorded specimens had been taken in June, it seemed evident that there had been several generations feeding on knotgrass in standing corn, and that the whole story had been revealed by the reaping of the harvest. He also exhibited one *Heliothis armigera* and three *Laphygma exigua* which had been taken by Mr. L. Christie at a searchlight on Tooting Common on 10th October.

Dr. Hinton remarked that the discussion seemed to reveal a lack of appreciation of the distinction between dispersal and migration on the one hand and migratory behaviour on the other. True migratory behaviour was distinguished by the fact that insects displaying it required a definite conditioning period, although it might be set off by a single climatic factor ; it was entirely different from dispersal whether by air currents or ships and from movements such as those described, for example, by Mr. Green.

Captain Dannreuther gave a summary of the records he had received as Secretary of the Insect Immigration Committee during 1947. The only outstanding features were the immigration of *R. sacraria* and, in a lesser degree of *Colias croceus* and *C. hyale*. He gave several interesting instances of the trouble and pains taken by observers to obtain accurate data. He mentioned in particular one series of observations from which it was possible to calculate the rate of arrival of *Macroglossum stellatarum* on the south coast. Finally, he called attention to the fact that the existing Insect Migration Committee was in need of new blood, and expressed a hope that a transfusion operation might be considered by Council.

By a show of hands the altered seating and epidiascope arrangements were voted a distinct improvement.

N. D. RILEY, *Hon. Secretary.*

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